

## Claims

1. A method of managing access network protocol context in an access system comprising a plurality of mobile nodes (MS/MN), access nodes (SGSN1, SGSN2) serving said mobile nodes, a first gateway node (GGSN1) for interfacing a first part (RAN1) of the access system with external networks (12), and a first mobility entity (FA1) which is associated with said first gateway node (GGSN1) and arranged to provide macro mobility management services to the mobile nodes (MS/MN) while registered to a respective part (RAN1) of the access system, said method comprising the steps of
- opening at least one access network protocol context at a first access node and the first gateway node in order to establish a connection between one of said plurality of mobile nodes (MS/MN) and said first gateway node,
- initiating a macro mobility registration over said access network connection between the mobile node and the first mobility entity, characterized by further steps of
- monitoring at the first gateway node the macro mobility registration, determining on the basis of the result of the registration that at least one access network protocol context is no longer necessary,
- triggering a deletion of the unnecessary access network protocol context.
2. A method as claimed in claim 1, characterized by determining at the first gateway node, in response to detecting a failure in said macro mobility registration, whether it is possible to retry the macro mobility registration or whether the registration has irrecoverably failed.
3. A method as claimed in claim 1 or 2, characterized by the gateway node sending a context deletion message to the first access node, when the macro mobility registration irrecoverably fails.
4. A method as claimed in claims 3, characterized by deleting at the first access node the PDP context to the first gateway node in response to receiving said context deletion message.
5. A method as claimed in claims 4, characterized by deleting at the first access node the PDP context to the mobile node in response to receiving said deletion message.

6. A method as claimed in any one of claims 1 to 5, characterized by said registration being due to a handover from a second gateway node to said first gateway node, the method comprising further steps of

5 deciding at the first access node, in response to receiving a context deletion message from the first gateway node, whether to maintain or recreate an old PDP context to an old gateway node, or to delete the PDP context to the old gateway node and/or to the mobile node.

7. A method as claimed in claim 6, characterized by  
10 said decision being based on a cause value in said context deletion message, said cause value indicating a cause for sending the context deletion message.

8. A method as claimed in any one of claims 1 to 7, characterized in that said macro mobility management is Internet Protocol-type, or IP-type mobility management.

15 9. A method as claimed in any one of claims 1 to 8 in a radio access system, characterized in that said access network protocol context comprises a packet protocol context .

10. A method as claimed in any one of claims 1 to 9, characterized in that said mobility entity associated with the gateway node  
20 (GGSN2) is a foreign agent (FA2).

11. An access system, comprising  
a plurality of mobile nodes (MS/MN),  
access nodes (SGSN1,SGSN2),  
a first gateway node (GGSN1) for interfacing said access system  
25 with external networks (11),

a first mobility entity (FA1) which is associated with said first gateway node (GGSN1) and arranged to provide macro mobility management services to the mobile nodes (MS/MN) while registered to a respective part (RAN1) of the access system,

30 each mobile node being able to perform a macro mobility registration to the first mobility entity over a respective dedicated access network connection established by opening an access network protocol context at a first access node and the first gateway node, characterized by

the first gateway node being arranged to monitor the macro mobility  
35 registration, to trigger a deletion of any access network protocol context which is no longer necessary on the basis of the result of the registration.

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12. A system as claimed in claim 11, characterized by the first gateway node being arranged to determine, in response to detecting a failure in said macro mobility registration, whether it is possible to retry the macro mobility registration or whether the registration has irrecoverably failed.

13. A system as claimed in claim 11 or 12, characterized by the gateway node being arranged to send a context deletion message to the first access node, when the macro mobility registration irrecoverably fails.

14. A system as claimed in claim 13, characterized by the first access node being arranged to delete the PDP context to the first gateway node and/or the PDP context to the mobile node in response to receiving said deletion message.

15. A system as claimed in any one of claims 11 to 14, characterized by said registration being due to a handover from a second gateway node to said first gateway node, and said first access node being arranged to decide, in response to receiving a context deletion message from the first gateway node, whether to maintain or recreate an old PDP context to an old gateway node, or to delete the PDP context to the old gateway node and/or to the mobile node, based on a cause value in said context deletion message, said cause value indicating a cause for sending the context deletion message.

16. A system as claimed in any one of claims 11 to 15, characterized in that said macro mobility management is Internet Protocol-type, or IP-type mobility management, and in that said mobility entity associated with the gateway node (GGSN2) is a foreign agent (FA2).

17. A system as claimed in any one of claims 11 to 16 in a radio access system, characterized in that said access network protocol context comprises a packet protocol context.

18. A gateway node for an access system which comprises a plurality of mobile nodes (MS/MN), access nodes (SGSN1,SGSN2) and a first mobility entity (FA1) which is associated with said first gateway node (GGSN1) and arranged to provide macro mobility management services to the mobile nodes (MS/MN), each mobile node being able to perform a macro mobility registration to the first mobility entity over a respective dedicated access network connection established by opening an access network protocol context at a first access node and the first gateway node, characterized by said

first gateway node being arranged to monitor the macro mobility registration and to trigger a deletion of any access network protocol context which is no longer necessary on the basis of the result of the registration.

19. A gateway node as claimed in claim 18, characterized by  
5 said gateway node being arranged to determine, in response to detecting a failure in said macro mobility registration, whether it is possible to retry the macro mobility registration or whether the registration has irrecoverably failed.

20. A gateway node as claimed in claim 18 or 19, characterized  
10 by said gateway node being arranged to send a context deletion message to the first access node, when the macro mobility registration irrecoverably fails.

21. A gateway node as claimed in claim 18, 19 or 20, characterized  
15 by said gateway node being integrated into the same physical node with said access node.

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